

## PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

TRANSLATION  
PCTWRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference <b>P2003, 0799WO</b>		Date of mailing (day/month/year)	<b>See form PCT/ISA/210</b>
		FOR FURTHER ACTION See paragraph 2 below	
International application No. <b>PCT/DE2004/002476</b>	International filing date (day/month/year) <b>09.11.2004</b>	Priority date (day/month/year) <b>13.11.2003</b>	
International Patent Classification (IPC) or both national classification and IPC <b>H01S5/183, H01S5/04</b>			
Applicant <b>OSRAM OPTO SEMICONDUCTORS GMBH</b>			

## 1. This opinion contains indications relating to the following items:

- |                                     |              |  |
|-------------------------------------|--------------|--|
| <input checked="" type="checkbox"/> | Box No. I    | Basis of the opinion   |
| <input type="checkbox"/>            | Box No. II   | Priority   |
| <input type="checkbox"/>            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability   |
| <input type="checkbox"/>            | Box No. IV   | Lack of unity of invention   |
| <input checked="" type="checkbox"/> | Box No. V    | Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/>            | Box No. VI   | Certain documents cited  |
| <input checked="" type="checkbox"/> | Box No. VII  | Certain defects in the international application   |
| <input checked="" type="checkbox"/> | Box No. VIII | Certain observations on the international application  |

## 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

## 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/EP	Authorized officer
Facsimile No.	Telephone No.

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Box No. I	Basis of this opinion
1.	<p>With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.</p> <p><input type="checkbox"/> This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).</p>
2.	<p>With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:</p> <p>a. type of material</p> <p><input type="checkbox"/> a sequence listing</p> <p><input type="checkbox"/> table(s) related to the sequence listing</p> <p>b. format of material</p> <p><input type="checkbox"/> in written format</p> <p><input type="checkbox"/> in computer readable form</p> <p>c. time of filing/furnishing</p> <p><input type="checkbox"/> contained in the international application as filed.</p> <p><input type="checkbox"/> filed together with the international application in computer readable form.</p> <p><input type="checkbox"/> furnished subsequently to this Authority for the purposes of search.</p>
3.	<p><input type="checkbox"/> In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.</p>
4.	<p>Additional comments:</p>

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<b>Box No. V</b>	<b>Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</b>		
<b>1. Statement</b>			
Novelty (N)	Claims		YES
	Claims	1	NO
Inventive step (IS)	Claims		YES
	Claims	2-16	NO
Industrial applicability (IA)	Claims	1-16	YES
	Claims		NO
<b>2. Citations and explanations:</b>			
<p>1. Reference is made to the following documents:</p> <p>D1: US 2002/0075935 A</p> <p>D2: JP 07 249 824 A associated abstract from "Patent Abstracts of Japan"</p> <p>D3: DE 100 26 734 A</p> <p>D4: DE 101 08 079 A</p>			
<p>2. The present application does not meet the requirements of PCT Article 33(1) because the subject matter of claim 1 is not novel within the meaning of PCT Article 33(2) (also see lack of clarity in box VIII).</p> <p>Document D1 discloses an optically pumped semiconductor laser device (see paragraph 0039 - paragraph 0045 and figures 1 - 6, 8, 9). The semiconductor laser device comprises</p> <ul style="list-style-type: none"> <li>- a surface emitting vertical emission region and</li> <li>- at least one monolithically integrated pump radiation source for optically pumping the vertical emission region.</li> </ul> <p>The at least one pump radiation source is set up and</p>			

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Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

arranged in such a way that the pump radiation enters the vertical emission region in the form of partial radiation bundles with different radiation directions. Since the at least one pump radiation source is arranged in such a way that its pump light is concentrated into the active layer of the pumped semiconductor laser device, it can be assumed that a whole or partial overlap of whatever configuration with the fundamental mode of the vertical emission region takes place.

For the reasons given above, the laser arrangement from document D2 may also be regarded as prejudicial to novelty with regard to the subject matter of claim 1. In the case of the laser of document D2, too, it is possible to determine the fundamental mode of the vertical emission region. Here, too, it can be assumed that a whole or partial overlap of whatever configuration with the pump radiation takes place during operation of the laser.

3. Dependent claims 2 - 16 do not contain any features, which, in combination with the features of any claim to which they refer, meet the PCT requirements for novelty and inventive step. The reasons are as follows:

Claim 2: see D1, D2;

Claim 3: see box VIII.3;

Claim 4: see D1 - D4;

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Claim 5: see D1 - e.g. figure 6;

Claims 6 - 10: conventional measure;

Claim 11: see D4;

Claim 12: conventional measure - also see ellipsoid  
in D1, figure 8;

Claims 13 - 15: conventional measure;

Claim 16; see D1, figure 6.

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Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

The independent claim has not been drafted in the two-part form defined by PCT Rule 6.3(b) and PCT Rule 6.3(b)(ii).

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The application does not meet the requirements of PCT Article 6 because claim 1 is not clear.

1. Claim 1 does not meet the requirements of PCT Article 6 because the subject matter for which protection is sought is not clearly defined. The claim attempts to define the subject matter in terms of the result to be achieved: "...so that the pump radiation has an overlap with the fundamental mode of the vertical emission region"). The problem is described in paragraph 2 on page 2 of the application. It is disclosed in paragraph 2 that an emission in the fundamental mode is preferably to be achieved. The wording in claim 1, however, thus merely states the problem to be solved without defining the technical **device** features necessary for achieving this result (device features which bring about the desired effect).
2. In the case of the fundamental mode, it should have been clarified that the fundamental mode is the TEM<sub>00</sub>-mode (see page 2, paragraphs 1 - 3).
3. The expression "the amplifier region" is not clear. It is not clear what this expression refers to (amplifier region of the pump sources, amplifier region of the pumped semiconductor laser, what is to be amplified in the amplifier region). No "amplifier region" is defined in claims 1 and 2.